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Colorado Spill Shows Mountainous Task of Cleaning Old Western Mines

EPA accident highlights challenge of keeping abandoned sites from polluting water

Water flowed down Cement Creek just below the site of the blowout at the Gold King mine, near Silverton, Colo., on Thursday. PHOTO: BRENNAN LINSLEY/ASSOCIATED PRESS

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DENVER—When an old gold mine blew out during a botched cleanup last week, sending a torrent of toxic sludge down some of Colorado's most treasured waterways, it cast a new light on a problem that has long plagued the West.

More than 160,000 abandoned hard-rock mine sites litter the western U.S., and at least 33,000 of them have polluted local water sources or left piles of arsenic-laced tailings, according to federal estimates. Mining activity has contaminated headwaters of more than 40% of watersheds in the West, according to the Environmental Protection Agency.

But efforts to clean up abandoned mines, many of which date to the gold and silver rushes of the 19th century, have been hampered by a chronic lack of resources, political battles and engineering challenges.

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Water flowed through one of the retention ponds built to contain and filter out heavy metals and chemicals from the Gold King mine wastewater accident, outside Silverton, Colo., on Wednesday. PHOTO: BRENNAN LINSLEY/ASSOCIATED PRESS

In Colorado, state officials said there are roughly 200 abandoned mines leaking contaminants like lead, zinc and cadmium and significantly affecting water quality. The latest [spill at the Gold King Mine](#) near Durango, which was inadvertently caused [by an EPA contractor crew](#), sent three million gallons of

mustard-tinged muck down the Animas River. But even before that, hundreds of miles of Colorado streams and rivers were impaired or threatened by abandoned mines, according to state and federal data.

“Right now, acidity and metals in stream water is a huge problem,” said Bruce Stover, the director of Colorado’s inactive-mine reclamation program. “We are struggling to clean up these streams and meet clean-water requirements.”

Mr. Stover added, “There are literally hundreds of mines we are not going to get to for decades.”

5 THINGS ON THE SPILL

An EPA contractor inadvertently caused a breach at an inactive Colorado gold mine last week that sent a surge of toxic sludge into a major southwestern river system. Here are five things to know:

- **Who?** Fenton, Mo.-based Environmental Restoration LLC, a hazardous waste management and removal-services company, was the contractor doing the work that resulted in the breach of contaminated materials.
- **What?** Three million gallons of mustard-tinted sludge were released into the Animas River waterways. That is about 4 1/2 Olympic-sized swimming pools full of wastewater EPA says contains substances like lead and arsenic, which initially posed a threat to human safety and wildlife.
- **When?** The breach occurred Aug. 5. It took nearly a week—Aug. 11—for the issue to really get on the radar of EPA headquarters in Washington, D.C. On Aug. 12, EPA Administrator Gina McCarthy visited areas whose waterways were affected, including in Colorado and New Mexico.
- **How?** The contractor crew was using a piece of heavy equipment to remove backfill from the entrance to the mine when the pressure built up and caused a sudden release of the contaminated wastewater.
- **Why?** The agency was investigating the much-smaller levels of contaminated wastewater that were leaking from the mine long before the EPA arrived. In fact, this is just one of thousands of abandoned hard-rock mines across the western U.S. that the EPA and other stakeholders, such as nonprofit organizations and private companies, are trying to clean up.

The problem isn’t unique to Colorado. Before the 1970s, when tougher federal and state environmental laws required mining companies to take on more reclamation responsibility, it was common practice to abandon mine operations when no longer profitable.

In Montana, for example, roughly 150 old mines are leaking toxic water or have left highly contaminated tailings, or leftover waste, according to state data.

“Every single cleanup is a difficult project,” said Tom Henderson, a mining reclamation specialist for the state, noting that the recent removal of half a million tons of tailings from a single gold mine that contaminated Soda Butte Creek cost \$22 million in mostly federal funding and took five years.

Experts said it is difficult to pinpoint just how much contamination abandoned mines have caused in water sources. Elevated amounts of heavy metals like lead and copper, and also high acidity levels, will ebb and flow in rivers and streams, and also mix with naturally occurring heavy metals.

In Montana, current data show that about 1,300 out of 170,000 miles of rivers and streams, or about 0.8%, don't meet state water-quality standards because of abandoned-mine pollution.

Data released Thursday by Colorado showed that 1,645 of 105,000 miles of local rivers and streams, or 1.6%, fail to meet state water-quality standards because of likely contamination from legacy mining.

For years, the EPA has sought to identify the dirtiest abandoned mines by designating some as Superfund sites, which free up federal dollars for cleanups.

There have been some successes as the EPA has reclaimed vast, polluted mine sites in Colorado, South Dakota and elsewhere. From 1997 to 2008, federal agencies spent at least \$2.6 billion to reclaim abandoned hard-rock mines, according to the Government Accountability Office.

But in many ways, the Colorado spill exemplifies the difficulty federal and state regulators face in dealing with toxic mine sites. A congressional research report in 2006 said it could cost between \$20 billion and \$54 billion to clean up all hard-rock mines in the U.S., citing a 2004 study by the EPA.

The money to fund the Gold King cleanup comes out of the EPA's Superfund budget, which is a little over \$1 billion, even though the mine isn't a designated Superfund site, according to Scott Sherman, a former deputy assistant administrator at the agency in the George W. Bush administration. Local officials and residents have long resisted calls for the designation, fearing it would harm the region's tourist-driven economy.

For the past six years, leading up to the time of the spill, Gold King, which is owned by San Juan Corp., was already leaking toxic mine water at a rate of 60 to 250 gallons a minute, according to state data.

"It's a mess," said Peter Butler, co-coordinator of the Animas River Stakeholders Group, made up of local environmental groups, mining companies and federal and state agencies. "It's unclear who is responsible and who should pay."

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An EPA contractor on Wednesday worked on the cleanup in the aftermath of the blowout at the Gold King mine. PHOTO: BRENNAN LINSLEY/ASSOCIATED PRESS

On Friday, Colorado officials reopened the Animas River to recreational activities. EPA officials have said in recent days that water quality around the spill site is back to pre-

accident levels, but they have said toxic sediment would get stirred up during periods of high water.

Water sampling data taken by the EPA just after the spill and analyzed for The Wall Street Journal by Howard Ramsdell, an environmental toxicologist at Colorado State University, found elevated levels of dissolved lead and cadmium in portions of the Animas River.

In one stretch of river near Silverton, the dissolved cadmium was about three times the maximum contaminant level for drinking water, Mr. Ramsdell said, and about eight times the acceptable criteria for aquatic life.

The EPA has been criticized for its delayed response to the spill. But both mining experts and environmental groups said the breach exposed problems with the Clean Water Act, which they said stymied mine cleanups around the West.

Under the Act, any stakeholder, including nonprofit organizations and private companies, that want to clean up an abandoned mine must obtain a federal permit, a costly endeavor that also brings with it potentially huge financial liability.

Other mining experts noted that because cleaning up abandoned mines was so costly, the EPA had to utilize temporary mitigation measures as opposed to water-treatment facilities.

“You can expect such failures like the one we had at Gold King,” said Ron Cohen, a civil and environmental engineering professor at the Colorado School of Mines. “These sites are just sitting there waiting to fail, and most of them are going to fail sooner or later.”